① a) $f(1) = 0$ $\qquad$ $f(3) = 2$

$1 + \alpha + \beta + \gamma = 0$ $\qquad$ $27 + 9\alpha + 3\beta + \gamma = 2$

$27 - 81 + 3\beta + \gamma = 2$

$f'(x) = 3x^2 + 2\alpha x + \beta$

$f''(x) = 6x + 2\alpha \rightarrow f''(3) = 0$

$18 + 2\alpha = 0 \rightarrow \alpha = -9$

$-8 + \beta + \gamma = 0$

$-56 + 3\beta + \gamma = 0$

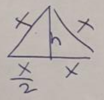
$48 - 2\beta = 0 \rightarrow \beta = 24$

$1 - 9 + 24 + \gamma = 0$

$\gamma = -16$

② $3x + 2y = 100 \rightarrow y = \dfrac{100 - 3x}{2} = 50 - \dfrac{3}{2}x$

$A =$



$A_T = \dfrac{x \cdot \frac{\sqrt{3}}{2} x}{2} = \dfrac{\sqrt{3}}{4} x^2$

$h = \sqrt{x^2 - \left(\frac{x}{2}\right)^2} = \dfrac{\sqrt{3}}{2} x$

$A_R = xy \rightarrow A_T = xy + \dfrac{\sqrt{3}}{4} x^2$

$A(x) = \dfrac{\sqrt{3}}{4} x^2 + x \cdot \left(50 - \dfrac{3}{2} x\right) = \dfrac{\sqrt{3}}{4} x^2 + 50x - \dfrac{3}{2} x^2$

$A'(x) = \dfrac{\sqrt{3}}{2} x + 50 - 3x \rightarrow A'(x) = 0$

$A''(x) < 0 \rightarrow$ màx $\qquad$ $x = \dfrac{100}{6 - \sqrt{3}} \simeq 23'43$

$y = 50 - \dfrac{50(6+\sqrt{3})}{11} \simeq 14'85$

Repàs
2nT

③

$1 + a + b = c$

$f'(x) = \begin{cases} 2x + a \\ c \end{cases}$

$2 + a = c$

$b = 4c$

$1 + a + 4c = c$

$1 + a + 3c = 0$

$2 + a - c = 0$

$1 - 4c = 0 \rightarrow 4c = 1 \rightarrow c = \frac{1}{4}$

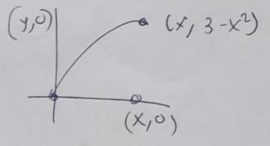
$b = 1$

$2 + a = \frac{1}{4}$

$a = \frac{1}{4} - 2$

$a = -\frac{7}{4}$

④



$A = x \cdot (3 - x^2)$

$A = 3x - 3x^3$

$A'(x) = 3 - 9x^2 = 0$

$9x^2 = 3$

$x^2 = \frac{1}{3}$

$x = \pm\sqrt{\frac{1}{3}}$

$A''(x) < 0 \rightarrow$ Máx